CONTENTS

GENERAL SESSIONS:	Author	Page
President's Report	*H. E. Brewbaker*	2
Administration of the Sugar Act of 1948	*James H. Marshall*	10
Report of the Secretary	*C. E. Cormany*	18
Report of the Treasurer	*C. E. Cormany*	19
Report of Resolutions Committee No. 1	*H. B. Walker*	20
Report of Resolutions Committee No. 2—"In Memoriam"	*H. B. Walker*	21
Recent Developments in the Control of Weeds	*W. W. Robbins*	25
Fertilization of Sugar Beets	*Omer J. Kelley*	31
A Resumé of Sixteen Years of Sugar Beet Machinery Research	*H. B. Walker*	37
Recent Developments in the Processing of Beet Sugar	*R. H. Cottrell*	48
The Utilization of Sugar Beet By-Products for Livestock Feeding	*E. J. Maynard*	59
SEED GERMINATION AND PREPARATION:		
Chemical Loosening of Seed Caps in Relation to Germination of Sugar Beet Seed	*C. F. Lackey*	66
Field Compared with Blotter Germinations for Processed, Graded, Single and Double Germ Seed	*H. L. Bush*	70
Report of Seed Germination Committee	*Bion Tolman*	78
Beet Seed Germination Methods	*C. W. Doxtator* *A. R. Downie*	81
Outline of Material for Discussion at Seed Germination Symposium	*C. E. Cormany*	83
Method of Germinating Segmented Sugar Beet Seed Used by the Great Western Sugar Company	*H. B. Saxton*	85
Method of Germinating Segmented Beet Seed	*H. B. Saxton*	87
Some Field Conditions Which Influence Germination Technique	*Bion Tolman*	93
The Effect of Pretreatment and Substrata on the Germination of Sugar Beet Seed	*Alice M. Anderson*	95
Beet Seed Decortication with a Commercial Huller	*R. S. Lambdin* *Walter Buckingham*	100
Decorticated Seed—One Year's Experience	*J. G. English*	102
Two Seasons' Experience with Beet Seed Decorticating Equipment	*R. J. Tingley*	106

	Author	Page
A Mechanical Spray Treater for Sugar Beet Seed	*Austin Armer*	108
Experience with Decorticated Seed on 30,000 Acres	*Robert C. Brown*	114
Stand Count Comparisons of Segmented and Decorticated Sugar Beet Seed	*C. E. Cormany* *Donald F. Peterson*	117
Present Status of Sugar Beet Seed Processing	*Roy Bainer*	120
Comparison of Clipper and Eureka Cleaning Mills on the Sizing of Segmented Beet Seed	*C. W. Doxtator*	125
PLANT IMPROVEMENT AND SEED PRODUCTION:		
Progress in Breeding Sugar Beets for Resistance to Aphonomyces Root Rot	*C. W. Doxtator* *A. R. Downie*	130
Progress Report on Breeding of Sugar Beets in Minnesota for Resistance to Black Root	*H. W. Bockstahler* *Oscar E. Reece*	137
Comparative Reaction of Sugar Beet Strains to Black Root in Field Tests at Blissfield, Michigan, and Waseca, Minnesota, 1947	*J. O. Gaskill* *H. W. Bockstahler* *Oscar E. Reece*	142
Strains of Sugar Beets Extremely Resistant to Bolting	*J. S. McFarlane*	151
Inheritance of Bolting Resistance	*W. B. Marcum*	154
Utilization of Male Sterility in Breeding Superior-Yielding Sugar Beets	*F. V. Owen*	156
A Preliminary Test of the Efficiency of a Modified Gamete-Selection Method for Breeding Sugar Beets	*H. E. Brewbaker* *R. R. Wood*	162
Report on 1947 Tests of U. S. 215 x 216 and of Other Varieties from Sugar Beet Leaf Spot Resistance Breeding Investigations of the U. S. D. A.	*G. H. Coons* *Dewey Stewart* *H. W. Bockstahler* *G. W. Deming* *J. G. Lill* *S. B. Nuckols* *O. E. Reece*	166
A Promising Sugar Beet Hybrid of the Milpitas Wild Type X Commercial	*H. W. Dahlberg* *H. E. Brewbaker*	175
New Sugar Beet Strains from U. S. 22 with Higher Curly-Top Resistance	*Albert M. Murphy* *F. V. Owen* *G. K. Ryser*	179

	Author	Page
A New Sugar Beet Variety, U. S. 56, for Fall and Winter Plantings in California	*Charles Price* *F. V. Owen* *Eubanks Carsner*	181
Breeding Sugar Beets with Root Conformation Adapted to Machine Harvest	*G. W. Deming*	187
Thermal Induction and Reversal in Relation to Beet Seed Production	*Ray A. Pendleton*	192
Increase in Root Weight of Sugar Beets During Their Reproductive Phase	*J. M. Fife* *Charles Price*	196
Spacing Sugar Beets for Seed Production	*Ray M. Pendleton*	204
Fertilization and Time of Planting as Related to Yield of Sugar Beet Seed in the Hemet, California, Area	*Irwin E. Farrar*	208

PLANTING AND THINNING:

1947 Mechanical Thinning Tests	*Bion Tolman* *Ronald Johnson* *A. J. Bigler* *Grant Nichol* *R. T. Nelson* *C. P. Parrish* *C. W. Doxtator* *H. P. H. Johnson*	214
Stands Resulting from Low Seeding Rates of Decorticated Seed with a Precision Planter	*R. J. Tingley*	221
Red River Valley Experience in Mechanizing Sugar Beet Growing and Harvesting Operations—Season 1947	*O. A. Holkesvig*	223
A Press Wheel Study to Improve Beet Seedling Emergence	*R. D. Barmington*	225
Improvement of Sugar Beet Seedling Emergence by Planter Development	*S. W. McBirney*	229
The Relationship of Seed and Cell Size to Planter Performance	*R. D. Barmington*	240

GENERAL AGRONOMY:

Space Relationships as Affecting Yield and Quality of Sugar Beets	*G. H. Coons*	252
Effect of Spacing and Doubles on Yield of Sugar Beets in Michigan Area	*M. G. Frakes*	269
What Is the Practical Spacing Pattern for Sugar Beets Grown in the Red River Valley?	*A. W. Skuderna*	271
Sugar Beet Yields from Varying Row Spacings and Acre Population	*C. W. Doxtator*	276

	Author	Page
The Effect of Variations in Row Width and Plant Populations on Root Yields and Sucrose Percentage of Sugar Beets at Ft. Collins, Colo.	*G. W. Deming*	280
Row Widths and Sugar Beet Production	*Bion Tolman* *Ronald Johnson* *A. J. Bigler*	282
Recent Experimental Results of Row Spacings and Field Population of Sugar Beets	*R. J. Tingley*	287
Physiology of Growth and Mineral Intake of Sugar Beets	*M. M. Afanasiev* *H. E. Morris* *E. E. Framm*	290
Application of Liquid Fertilizers at Time of Planting	*Harvey P. H. Johnson*	291
Effect of Fertilizers on Diseases and Yield of Sugar Beets Planted in Depleted Soil	*M. M. Afanasiev*	294
Results on Different Seeding Rates of Sugar Beets as Affecting Yield and Hand Labor Requirements	*R. T. Nelson* *R. R. Wood*	300
Fertilizer Trials in Southeastern Colorado	*C. E. Cormany* *E. P. Pattison* *J. T. Alexander*	304
A Preliminary Report on the Relative Efficiency of Some Phosphate Fertilizers on Calcareous Soil	*J. L. Wursten*	308
Symptoms of Nutritional Disorders in Sugar Beets	*R. L. Cook*	316
The Relationship of Yield and Size of Beets to Sucrose Percentage of Beets Grown in Southern Alberta, Canada	*K. W. Hill*	329
Crop Rotation Practice in the Red River Valley	*J. C. Tanner*	335
The Effect of Temperature Upon the Growth and Yield of Sugar Beets	*L. T. Pierce*	338
Comparison of Various Chloride and Sulfate Salts as Fertilizers for Sugar Beets	*R. R. Wood* *R. T. Nelson*	349
Sugar Beet Fertilizer Experiments on Recently Levelled Land	*Robert S. Whitney* *D. W. Robertson* *Robert Gardner*	353
Simulated Hail Damage to Sugar Beets	*H. E. Morris*	358

IRRIGATION AND SOIL FERTILITY:

Plant Analysis as a Guide to the Nutrition of Sugar Beets in California	*Albert Ulrich*	364

	Author	Page
Interrelations of Moisture, Spacing and Fertility to Sugar Beet Production	*J. L. Haddock* *Omer J. Kelley*	378
Soil Fertility Studies in the Mountain States	*Bion Tolman* *Ronald Johnson* *A. J. Bigler*	397
Harvest Results of Inorganic Fertilizer Tests on Sugar Beets Conducted in Four States, 1947	*R. T. Nelson* *Robert Gardner* *H. F. Rhoades* *T. J. Dunnewald* *J. C. Hide* *R. R. Wood* *J. A. Asleson* *J. L. Mellor* *F. V. Pumphrey*	407
Summary of Fertilizer Results, 1947	*A. R. Downie*	421
The Effect of Phosphate Fertilizer on Yield of Sugar Beets	*F. J. Hills* *R. G. Veaco*	427
WEED CONTROL:		
Results with Pre-Emergence Spraying in Beet Field for Control of Wild Oats	*R. T. Nelson*	432
Progress Report on Weed Control Studies at Fort Collins, Colorado	*G. W. Deming*	435
Salt Sprays for the Control of Weeds in Sugar Beets in the Pacific Northwest	*Ray A. Pendleton* *Virgil H. Freed*	445
Results of Weed Control Experiments in Sugar Beet Fields in the Eastern Area in 1947—A Progress Report	*G. E. Nichol*	450
Weed Control Studies on Sugar Beets Using Pre-Emergence Treatments	*S. W. McBirney*	453
ENTOMOLOGY:		
Comparative Toxicity of Some New Insecticides to Beet Leafhoppers on Sugar Beets in Idaho, 1947	*J. R. Douglass* *K. E. Gibson* *H. C. Hallock* *W. E. Peay*	466
Field Insecticide Tests Against the Beet Leafhopper in Sugar Beets Grown for Seed	*Orin A. Hills* *A. A. Mast* *R. C. Wood*	480
Beet Leafhopper Control with DDT Vapor Sprays	*L. G. Smith*	487

	Author	Page
Progress Report on the Commercial Control of Lygus on the Sugar Beet Seed Crop in Arizona and New Mexico	*W. B. Morrow*	493
Effect of Lygus Control on Seed Yields in Arizona and New Mexico	*R. C. Wood*	495
The Effect of Lygus Control on Seed Cleaning	*A. A. Mast*	497
The Effect of Lygus Control on the Production of Elite Seed	*C. W. Doxtator*	499
Lygus Damage to Beet Seed in Varying Stages of Development	*Orin A. Hills* *Edgar A. Taylor*	502
PLANT PATHOLOGY:		
Soil Fumigation Work in 1947	*Gerald Thorne* *Vernal Jensen*	506
Observations on the Mechanics of Soil Fumigation	*F. H. Leavitt*	509
Spray Treatment of Sugar Beet Seed	*L. D. Leach*	514
Effect of Seed Treatments on Seedling Diseases of Beets Planted in the Greenhouse in Highly Infested Soil	*M. M. Afanasiev*	520
Cooperative Seed Treatment Tests, 1947	*A. R. Downie*	523
The Damages Induced by a Severe Epidemic of Cercospora Leafspot on Susceptible and Resistant Varieties of Sugar Beets	*Dewey Stewart*	528
Some Studies of Curly Top Virus in the Field	*N. J. Giddings*	531
CHEMISTRY AND FACTORY OPERATION:		
Anthrone in Estimating Low Concentrations of Sucrose	*E. E. Morse*	540
An Automatic Polariscope	*W. O. Bernhardt*	547
Kinetics of Sucrose Crystallization	*William P. Whelan, Jr.* *Theodore T. Galkowski* *Andrew Van Hook*	552
Sugar End Operation on Ion Exchange Juice	*H. E. Ellison*	557
Measurements of Sugar Yields and Losses of Spreckels Sugar Company	*W. A. McCann*	563
Some Studies on Continuous Carbonation	*R. A. McGinnis*	573
The Chemistry of Lime Salts in Sugar Beet Juices	*J. Dedek*	595
A Continuous, Automatic Device for Alkalinity Measurement and Control	*E. E. Morse*	611
Experience in the Treatment of Thick Juice with Calcium Chloride in Operations at Missoula	*F. W. Weitz*	618

	Author	Page
The Continuous Sugar Detector	*Rudolph H. Larsen*	624
Pulp Press Water Reclamation	*W. O. Weckel*	629
A Small Scale Technique for Simulating Large Pile Conditions in Cooling and Storing Sugar Beets	*Myron Stout* *C. A. Fort*	635
Michigan State College Sugar Beet Storage Experiment	*C. M. Hansen*	641
Comparative Composition of Different Parts of the Sugar Beet Root	*C. A. Fort* *Myron Stout*	651
Sugar Beet Storage Experiment, 1947	*A. R. Downie*	660
Permanent Beet Storage Installation Cost Studies	*G. W. Howard*	665
1947 Results of Beet Storage Pile Ventilation	*L. J. Holmes*	669
ION EXCHANGE:		
Observations on Ion Exchange Purification of Low Grade Syrups in Conventional Beet Sugar Refining Methods	*E. F. Berry* *Robt. S. Gaddie*	674
High Pressure Evaporation	*Fred F. Coons*	680
Full Scale Ion Exchange Operations at the Hardin Plant of the Holly Sugar Corporation	*E. A. Haagensen*	690
Non-Sugars in Beet Juices Removable by Ion Exchange	*E. B. Fitch* *J. W. Michener*	696
Comments on Use of Ion Exchange Resins in Demineralizing Sugar Beet Juices	*C. A. Fort*	705
Tetraphospho Glucosate as a Scale Inhibitor	*Somers Moore*	709
De-Ionization and Beet Sugar Production at the Layton Sugar Company	*Lyle B. Porter*	714
HARVESTING MACHINERY:		
Experience and Progress with International Sugar Beet Harvester	*J. L. Hipple*	724
Sugar Beet Harvester Studies at the University of California	*J. B. Powers*	727
Beater Type Topper Use 1947—In Nampa Nyssa District of the Amalgamated Sugar Company	*Robert Van Horne* *Read A. Wilkinson*	731
Experiences During 1947 with the Scott-Urschel Beet Harvester	*P. A. Reeve*	740
Observations on Mechanical Beet Harvesting in the Great Western Sugar Company Area in 1947	*P. H. McMaster*	743

	Author	Page
A Review of the 1947 Mechanical Harvest in California	*Austin Armer*	749
Survey of Beet Sugar Agriculture in 1947	*P. B. Smith*	752
Changing the Beet Root Shape to Conform to Mechanical Harvesting	*P. B. Smith*	764

SUGAR BEET BY-PRODUCTS:

Studies of Beet Top Silage Production in the Irrigated Rotation Experiments at the Scottsbluff, Neb., Field Station, 1942-47	*Lionel Harris*	770
Dehydrated Sugar Beet Leaves as a Feedstuff	*H. S. Wilgus* *H. P. H. Johnson* *A. L. Esplin* *P. B. Smith*	778
Tests on Loss Reduction in Sliced Beet Pulp	*H. R. Guilbert*	791
Feeding Values of Sugar Beet By-Products	*E. J. Maynard*	792